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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,035	11/01/2001	Jeffrey W. Carr	CARR-01000US1	5043

23910 7590 11/05/2003

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EXAMINER

OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/002,035

Applicant(s)

CARR, JEFFREY W.

Examiner

Allan W Olsen

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 18-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>16</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 11, 2003 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 7, 9-11, 18-20 and 22-31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,035,604 issued to Meleka et al. (hereinafter, Meleka).

Meleka teaches a method for finishing articles wherein the surface of the article is treated with a plasma plume such that the burrs are removed from the article's surface. As such plasma smoothes the surface or reduces the surface roughness of the article. Meleka teaches that the method is designed to prevent damaging the surface of the workpiece (column 2, lines 15-30; column 6, lines 41-46). The plasma is produced by a plasma torch that features three concentric gas supply tubes (figure 2, column 4,

lines 33-52; column 4, line 59 – column 5, line 10). Meleka teaches providing a reactive gas through the central tube such that reactive species are injected into the central or core region of the plasma. Meleka teaches that the plasma torch may be operated at atmospheric pressure. Meleka teaches the plasma treatment may also be used to provide a coating to the workpiece (column 6, lines 4-12). See also: column 6, lines 37-38 and 57-59.

Claims 1-11, 19-29 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,000,771 issued to Fleming, Jr. et al. (hereinafter, Fleming).

Fleming teaches a method of treating optical performs with the plume of an atmospheric pressure plasma to smooth or polish a workpiece surface leaving it free of both defects and residue. A plasma torch that features two concentric gas supply tubes produces the plasma. Fleming teaches providing a reactive gas through the central tube such that reactive species are injected into the central or core region of the plasma. See: abstract; figure 1; column 2, lines 15-20, 25-27, 35-36; column 3, lines 22-30, 40-59; column 6, lines 40-45; and column 7, lines 4-14 and 35-42.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming as applied to claim 1 above, and further in view of Zarowin et al. in Rapid Non-Contact, Damage Free Shaping of Optical and Other Surfaces with Plasma Assisted Chemical Etching, 43rd Annual Symposium on Frequency Control 1989, 632-626 (hereinafter, Zarowin).

The above noted teachings of Fleming are herein relied upon. It is additionally noted that Fleming discusses using conventional methods to monitor the process (column 8, lines 1-40).

Fleming does not teach using the emission spectroscopy to monitor the process.

Zarowin teaches using the emission spectroscopy to monitor a similar process.

It would have been obvious to one skilled in the art to monitor the plasma process of Fleming by emission spectroscopy because Zarowin demonstrates the utility of emission spectroscopy to monitor a process similar to that of Fleming and in so doing demonstrates that emission spectroscopy is a conventional monitoring method. Additionally, the examiner notes that the skilled artisan would know that the ICP torches have traditionally been used in analytical methods wherein the plasma species are monitored by various spectroscopic methods.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming as applied to claim 1 above, and further in view of U.S. Patent 5,961,772 issued to Selwyn.

Fleming does not teach using a gas mixture comprising CF₄ and Ar as the reactive plasma gas.

Selwyn teaches using a gas mixture comprising CF₄ and Ar as reactive plasma gases.

It would have been obvious to one skilled in the art to use a gas mixture comprising CF₄ and Ar as reactive plasma gases because it is well within the level of ordinary skill to select an appropriate plasma gas for the particular substrate that is being treated and for the particular result that one is trying to achieve and Selwyn teaches that a reactive gas comprising a mixture of CF₄ and Ar may be used successfully to treat a workpiece with a plasma torch.

Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming as applied to claim 1 above, and further in view of Böhn et al. in DE 199 25 790 A1 (hereinafter, Böhn).

Böhn does not teach using a gas mixture comprising CF₄ or SF₆ with Ar as the reactive plasma gas.

Böhn teaches using a gas mixture comprising CF₄/Ar and SF₆/Ar as the reactive plasma gas.

It would have been obvious to one skilled in the art to use a gas mixture comprising CF₄/Ar or SF₆/Ar as the reactive plasma gas because it is well within the level of ordinary skill to select an appropriate plasma gas for the particular substrate that is being treated and for the particular result that one is trying to achieve and Böhn teaches that a reactive gas comprising a CF₄/Ar or SF₆/Ar mixture may be used successfully to treat a workpiece with a plasma torch.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming and Selwyn as applied to claim 13 above and further in view of US Patent 6,068,784 issued to Collins.

The Fleming/Selwyn combination does not teach using C₂F₆ as the reactive fluorine-containing etchant.

Collins teaches etching the same materials as Selwyn (for example, silicon and silicon dioxide) and Collins teaches using a gas mixture of CF₄ and Ar as well as using a mixture of C₂F₆ and Ar (column 10, lines 28-30).

It would have been obvious for one skilled in the art to use C₂F₆ in lieu of CF₄ in the method of Fleming/Selwyn because Collins teaches that the CF₄ and C₂F₆ are functionally equivalent as plasma etchants for silicon containing materials.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fleming and Böhn as applied to claims 13 and 15 above and further in view of US Patent 6,068,784 issued to Collins.

Fleming/Böhn does not teach using C₂F₆ as the reactive fluorine-containing etchant.

Collins teaches etching the same materials as Böhn (for example, silicon and silicon dioxide) and Collins teaches using a gas mixture of CF₄ and Ar as well as using a mixture of C₂F₆ and Ar (column 10, lines 28-30).

It would have been obvious for one skilled in the art to use C₂F₆ in lieu of CF₄ in the method of Fleming/Böhn because Collins teaches that the CF₄ and C₂F₆ are functionally equivalent as plasma etchants for silicon containing materials.

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Conclusion

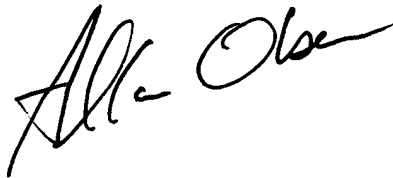
The prior art made of record on the attached PTO Form 892 is considered pertinent to applicant's disclosure but is not relied upon at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 703-306-9075. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Mills, can be reached on 703-308-1633.

The general fax numbers for TC1700 are 703-872-9310 (non-after finals) and 703-872-9311(after-final).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Allan Olsen, Ph.D.
October 29, 2003

A handwritten signature in black ink, appearing to read "Allan Olsen", written in a cursive style.